

Claims

1. An assembly comprising a plurality of mask containers,
5 each for holding one or more lithography masks, wherein
each one of the containers has an engaging apparatus
adapted to engage with the corresponding engaging
apparatus on another one of the containers, such that
10 two or more containers can be stacked together in a
fixed relationship to one another, and wherein each
mask container has an electronic tracking device, the
tracking device having a receiver unit for receiving
lithography data, a memory for storing the lithography
15 data, a processor unit for reading or writing the
lithography data to or from the memory, and a
transmitter unit for transmitting the lithography data
read from the memory.
2. The assembly as claimed in claim 1, wherein the
20 engaging apparatus comprises a latch mounted on one
face of the container, and a catch mounted on an
opposite face of the container, such that two or more
mask containers may be engaged by engaging the latch of
one mask with the catch of another mask.
- 25 3. The assembly as claimed in claim 1, wherein each
container has electrical contacts positioned such that
contacts on two neighbouring containers in a stack form
an electrical connection when the two containers are
30 correctly positioned relative to each other.

4. The assembly as claimed in claim 1, wherein the receiver unit and the transmitter unit respectively receive and transmit radio frequency radiation.
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5. The assembly as claimed in claim 1, wherein the receiver unit and the transmitter unit respectively receive and transmit infra-red radiation.
- 10 6. The assembly as claimed in claim 1, wherein the memory is an EEPROM.
7. The assembly as claimed in claim 1, wherein the memory is an SRAM.
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8. The assembly as claimed in claim 1, wherein the tracking devices of the mask containers in a stack are adapted to communicate lithography data with each other.
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9. The assembly as claimed in claim 8, wherein the tracking devices in each container are programmed to identify the other containers in the stack and select between themselves one tracking device to transmit
- 25 lithography data representative of all the containers in the stack.

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10. A manufacturing system for manufacturing semiconductor devices comprising:
- a plurality of mask containers, each for holding one or more lithography masks, each one of the
 - 5 containers having a locking apparatus adapted to engage with the locking apparatus on another one of the containers, such that two or more containers can be carried together in a fixed relationship to one another;
 - 10 a plurality of lithography bays;
 - a transport rail system for carrying the containers between different lithography bays;
 - wherein each lithography bay has a transmitter unit and a receiver unit for respectively transmitting
 - 15 and receiving lithography data, and each mask container has an electronic tracking device having a receiver unit for receiving lithography data from a lithography bay, a memory for storing the
 - lithography data, a processor unit for reading or
 - 20 writing the lithography data to or from the memory, and a transmitter unit for transmitting the lithography data read from the memory to the same lithography bay or another lithography bay.
- 25 11. The manufacturing system as claimed in claim 10, wherein a handling apparatus is provided for automatically loading or unloading mask containers onto or from the rail system.

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12. The manufacturing system as claimed in claim 11,
wherein there is provided a handling apparatus for
bringing mask containers into stacked engagement with
one another and for releasing a container from a stack
5 or automatically removing a mask from a container.
13. The manufacturing system as claimed in claim 11,
wherein there is provided a central computer with an
input and output port for exchanging lithography data
10 with the mask containers and the lithography bays.
14. The manufacturing system as claimed in claim 13,
wherein the rail system is provided with a traction
apparatus for moving the mask containers and wherein
15 the traction apparatus is controlled by the central
computer.

18. An assembly comprising a plurality of mask containers,
each for holding one or more lithography masks,
wherein each one of the containers has an engaging
apparatus adapted to engage with an engaging apparatus
on another one of the containers, such that two or
more containers can be stacked together in a fixed
relationship to one another, and wherein each mask
container has an electronic tracking device, the
tracking device having a receiver unit for receiving
first lithography data, a memory for temporarily
storing the first lithography data, a processor unit
for processing the first lithography data and for
providing second lithography data, and a transmitter
unit for transmitting the second lithography data.

19. A method of operating a semiconductor device manufacturing system, the manufacturing system comprising a plurality of mask containers each containing a single mask and each container having a tracking device for transmitting and receiving data corresponding to the mask within the container, the method comprising the following steps:
- receiving lithography data from a plurality of mask containers, selecting two or more containers on the basis of the received lithography data;
- operating a first automatic handling device so as to group together the selected containers in the form of a stack and to place the stack on a rail system connecting to a lithography bay having an exposure tool apparatus;
- operating the rail system so as to transport the stack to the lithography bay;
- further operating the exposure tool apparatus to receive lithography data from at least one of the mask containers in the stack; and,
- operating the lithography tool according to the data received from a mask container in the stack; wherein operating the lithography tool comprises at least one step out of the group of the following steps:
- removing a mask from a container;
 - inserting a mask into a container;
 - removing a mask, returning the mask to a container and subsequently removing another mask from a different container
 - unstacking the containers in a stack

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- reassembling a stack
- adding data to a mask in electronic form;
- reading data from a mask;
- 5 • exposing a semiconductor wafer or any other work-product by sending electromagnetic radiation through a mask;
- storing a mask;
- manufacturing a mask;
- maintaining a mask;
- 10 • monitoring the transmission properties of a mask;
- damaging a mask, disposing of a mask, recycling a mask, or any other action that removes a mask from the factory;
- testing and measuring the properties of a mask, either directly, or indirectly;
- 15 • assigning an identifier for a mask;
- assigning an identifier for a plurality of masks; and
- transferring information that relates to a mask
- 20 from a first electronic device in a first container to a further electronic device in a further container.